



**Oil and Fuel Transfer
Over Waters of the State of Washington
A Report to the Legislature**

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Background and Purpose of Report

Shortly after midnight on December 30, 2003, approximately 4,700 gallons of heavy oil spilled to Puget Sound while a tank barge was receiving oil cargo from a Richmond Beach terminal. Oil spilled into the water was not immediately contained within protective boom, and eventually flowed south, then west across Puget Sound to Indianola Beach. Subsequently, a salt-water marsh of cultural and environmental significance was contaminated.

As the Washington State Legislature convened in January 2004, talk focused on the failure to prevent and contain this spill and the resulting economic and environmental damages. Concepts discussed included placing containment boom in the water prior to oil transfers, increased personnel assigned during transfers, automated tank level alarms and shutoffs, and more alternative prevention measures. Other issues were also identified: why are some oil-handling facilities regulated and others not? What other oil transfers occur over our waters? What risks are posed? And what may we do to move towards reaching a goal of zero oil spills? Ecology was requested to report to the legislature with answers to those questions.

This report fulfills the Department of Ecology's responsibility under Chapter 226, Laws of 2004. As directed, the spill prevention and response planning requirements, both state and federal, will be discussed. This report will also describe current oil and fuel transfer practices in Washington and present recommendations for regulatory improvements including new authorities necessary for developing a comprehensive protection system for oil transfers and the funding needed to implement it.

Amended Revised Code of Washington (RCW) 88.46.160 also directed Ecology to develop regulatory standards for deployment of recovery and containment equipment, training on its use, and other alternative prevention standards by June 2006. As directed, an Oil Transfer Rule Advisory Committee was formed and has been working since August 2004, considering and discussing appropriate standards and advising the Department on writing the rules. The Committee's work will be done once the rule is completed.

Additionally it should be noted that another relevant rule process will be concluding within the same time period, amending the state's oil spill contingency plan rules. This rule requires rapid responses to oil spills from the state regulated vessels and facilities that operate on Washington's waters, and sets standards for response equipment and training.

Report Overview

Oil spills pose a significant risk to the state's environment and economy. The 2004 Washington State Legislature passed Substitute Senate Bill 6641 with broad support. That bill amended RCW 88.46.160 and adopted a zero spills strategy to prevent oil from entering the waters of the state. Specifically, the legislation directed Ecology to complete rules by June 30, 2006 that address oil transfer operations that occur over state waters. These rules will establish pre-booming and alternative measures to prevent and contain these spills.

The most important way to achieve the "zero spills" goal is to focus on spill prevention equipment, operating procedures, and personnel training that are in place prior to an oil transfer operation beginning. In Ecology's experience, prevention is most effective when the people involved are highly qualified, aware, and communicate effectively. Placing containment boom in the water (pre-booming) ahead of the transfers is an early intervention measure that can greatly minimize the impacts of spills. However, pre-booming is not safe and effective in all circumstances.

This report presents Ecology's review of federal and state laws and regulations, and on page 8 highlights three regulatory gaps that can be closed with action by either Ecology (rules) or the Legislature (clarification of legislative intent). The report also contains a description of current oil transfer practices and points out how business practices have evolved since the beginning of Washington's spill management program in the 1970's. This report makes a number of conclusions and recommendations that would allow the state to align its regulatory and technical assistance efforts with those changing business practices.

The report also proposes a comprehensive state inspection and compliance program. In defining that program, the report recommends additional staffing and funding for the Legislature to consider. The report concludes with specific recommendations for improving our strategy to reach the goal of "zero spills to water."

Ecology would like to thank the Washington State Legislature and Oil Transfer Rule Advisory Committee members for their leadership and foresight on this important matter.

Zero Preventable Oil Spills

In 1991, when the Legislature established Ecology's current oil spill program, prevention was singled out as the primary focus. Again in 2004, the legislature repeated its emphasis on prevention by stating the goal of Ecology's oil spill program to be "zero oil spills". In our experience, prevention is most effective when the people involved are highly trained, aware, and communicate effectively. Most causes of spills are attributable to human failures, but certainly not all. In an analysis of oil spills and vessel incidents investigated by Ecology since 1993, we found 52 percent were attributable to organizational failures, 30 percent to human error, 15 percent to equipment failures, and about three percent to environmental factors.

Oil deliveries to non-recreational vessels occur from three delivery modes: fixed facilities, mobile facilities and from vessel-to-vessel. Each of these modes is examined in detail later in this report.

Prevention regulations address events that occur **before and during** the transfer. Preparedness regulations require actions **before** the transfer based on the potential for a failed oil transfer. Response regulations require actions to be taken **after** oil is spilled to state waters. This report seeks to answer the Legislature's questions and makes recommendations with these assumptions in mind.

Current Prevention and Response Planning Requirements

The basic authorities for Coast Guard activities are found in the United States Code, Code of Federal Regulations, Executive Orders, and in international treaties and conventions to which the United States is signatory. Washington State oil spill law centers on chapters 90.56 and 88.46 of the Revised Code of Washington, and the rules written for each chapter, which provide the framework for both the state's prevention and response programs. For oil-handling facilities, tank vessels, covered cargo and passenger vessels, the state has developed and refined prevention regulations over the last 14 years. However, these regulations are limited to the population of facilities and vessels defined by state statute. And in some cases we are constrained in our regulations by federal preemption under the United States Constitution.

Historically, Washington and Oregon have developed compatible spill response regulatory standards for those covered vessels that transit the Columbia River, since it was recognized that spills on the river will impact both jurisdictions. When contemplating regulating oil transfers, it is important that the State of Oregon seek similar fueling regulations in order to protect the waters of both states.

For this report, we have analyzed the regulatory programs of both the Coast Guard and the Department of Ecology. Appendix A contains a list of relevant citations. The important points are summarized below:

- Both the Coast Guard and Washington State have broad programs to regulate tank vessels and the certain fixed oil handling facilities that transfer oil over our waterways, although due to differences in regulatory definitions the Coast Guard has authority over a larger number of fixed facilities than the state. Important for this report is the state's definition of *fixed* facility, which is limited to those companies that transfer oil in bulk to/from tank vessels or pipelines. This definition does not extend to fixed facilities that fill their storage tanks from fuel trucks, called *mobile* facilities. As a consequence, Ecology has seen smaller fixed facilities make a business shift to trucks as their oil source due in part to avoid state regulation. Yet fixed facilities have higher standards to prevent and prepare for spills, for example in the area of certified training programs for their operators, response equipment maintained on site and regular training/drilling on its use.
- There is a second regulatory distinction centered on mobile facilities. Until now, the state has chosen not to require spill prevention, training certification programs or contingency plans from mobile facilities transferring oil to vessels, focusing our efforts first on the transfers of larger vessels and fixed facilities. By contrast, the Coast Guard has authority to regulate oil transfers involving mobile facilities, but only when they transfer to or from a commercial vessel with an oil capacity of 10,500 gallons and above.
- Neither the Coast Guard's nor Ecology's prevention or response requirements are triggered by a non-recreational vessel receiving fuel with less than 10,500 gallons of oil capacity, unless it is a state regulated facility and then only one side of the transfer is regulated (the deliverer).

Washington's Agreement with the Coast Guard: A Memorandum of Agreement between the Thirteenth United States Coast Guard District and State of Washington has resulted in formalized protocols intended to improve coordination of oil pollution prevention and response efforts in Washington, including an agreement concerning the oversight of certain oil transfers. The purpose of these protocols is to maximize the oil spill efforts of the agencies by reducing duplication of effort, more effectively using resources, and improving communication and coordination. The differences in federal and state regulatory application (a specific example is the state's lack of oversight of mobile facilities) have somewhat limited the full implementation of this protocol. However, the rule-making required by this oil transfer legislation will help narrow the gap.

Current Oil Transfer Practices and Findings

Information was obtained for this study through interviews with operators that fuel vessels and move oil, joint Coast Guard field inspections of fueling and oil transfer operations, and studying the experiences of other states. Additional perspective was provided via interviews of oil transfer personnel and executives with long standing experience in this field, as well as Ecology's Oil Transfer Advisory Committee established to assist with this study and rule process.

In addition, information was provided through a federal requirement that certain oil transfers be reported to the Coast Guard four hours prior to commencement. This information has the following limitations:

- Only the time and place of oil transfers involving vessels with a minimum oil capacity of 10,500 gallons are required to be reported and were part of this study.
- There are no additional specifics on what is to be reported, so information such as volume of transfers was not necessarily provided to us, although the Coast Guard does give industry a form for reporting that includes location, volume, delivering and receiving names, type of oil and expected duration of the transfer.
- There is no requirement to report oil transfers to the State.

Self-reported data for six months, December 2004 through May 2005, was gathered and is included in this report.

Overview Data

While Ecology's data collection for this report is informative, there were difficulties in collecting data. As in many studies which cut across a segment of industry, information on current oil transfer locations, volumes, frequency and practices is not consistently required and is often incompletely reported by some parties.

For example, in the numbers presented here, there are no data from oil transfers to commercial vessels with an oil capacity under 10,500 gallons, which most frequently occur at remote fueling locations with little or no regulatory oversight. Also, those advance notice reports filed with the Coast Guard were often found to be incomplete, lacking information such as the location of transfer or volume. The volume data presented here do not include volume information from some refineries and other large businesses since this information is not required to be reported and is considered proprietary or confidential for security reasons. The study period did not include the high volume months of mid-summer. And finally, there is some anecdotal data to suggest that even those oil transfers that are required to be reported are not always provided to the Coast Guard, for reasons that are unknown.

Nonetheless, Ecology was still able to capture a meaningful data sample. During the six months under review, there were roughly 4,700 oil transfers totaling 80 million barrels (3,360,000,000 gallons) self reported to the Coast Guard. One barrel equals 42 gallons.

Table 1: Self Reported Data on Volume of Transfers and Delivery Mode

Self Reported Data of Fuel Deliverers: December 2004-May 2005	Mobile	Fixed	Vessels	Total
Volume of Transfers in Barrels	639,319	72,544,629	7,063,779	80,247,727
% of All Reported Transfers	1%	90%	9%	100.0%
Number of Transfers	1,128	2,706	847	4,681
% of All Reported Transfers	24%	58%	18%	100.0%

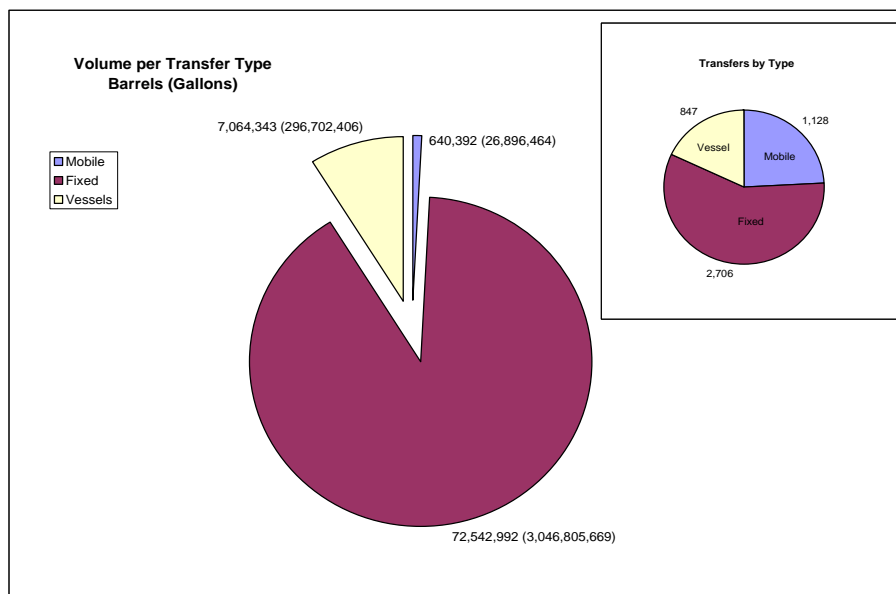
Table 1 above shows that of the 80 million barrels transferred in six months,

- 73 million barrels, or 90%, were transferred by fixed facility (e.g. refineries) that are under broad federal and state regulation;
- 7 million barrels, or 9%, were transferred by tank vessels; and
- 639,000 barrels, less than 1%, were transferred by mobile facilities.

While the more broadly regulated fixed facilities and tank vessels clearly handled the greatest volume of oil, it is important to consider the number of times each delivering source conducted a transfer. The six months of data show that

- Fixed facilities performed 2,706 transfers for 58% of the total,
- Vessels handled 847 transfers at 18%, and
- Mobile facilities performed 1,128 transfers for 24% of the total.

So while the volume is smaller, the mobile facilities have a large share of the oil transfers that occur in Washington, as shown in the charts below.



The data have been summarized into seven oil types. These products have different chemical and physical properties that become relevant when considering the questions of pre-booming and other response or prevention requirements. The heavier oils, those more persistent when spilled in the environment, include crude, heavy fuel oil and lube oil. Waste oil could contain any mix of these oils, and could be designated as a hazardous substance depending on how it was derived.

Table 2: Self Reported Data on types and volumes of oil transferred

Oil Type	in Barrels	in Gallons
Crude (persistent)	30,974,400*	1,300,924,800*
Diesel	14,400,678	604,828,476
Gasoline	14,953,436	628,044,312
Heavy Fuel (persistent)	17,023,651	714,993,342
Jet Fuel	2,802,001	117,684,042
Lube Oil (persistent)	72,236	3,033,912
Waste Oil	21,325	895,650
Total	80,247,727	3,370,404,534

**As an example of a data gap in oil volume, Western States Petroleum Association reports that 11 billion gallons of oil (crude and refined) moved to and from the refineries in Washington in 2003 (not including pipeline transfers). Our study captured 2/3rds of that, considering seasonality.*

Oil transfers occur statewide, in both inland and marine waters statewide. The data are presented here by city or region. What is significant to note is that there may be multiple locations within each city or region where transfers occur. For example, the city of Seattle has permitted more than 50 distinct locations where oil transfers are allowed to take place over water.

Table 3: Oil Transfers by city or region of the state

City or Region	Mobile	Fixed	V/V	City or Region	Mobile	Fixed	V/V
Aberdeen	33	2	--	Kalama	1	--	45
Anacortes	38	250	7	Kenmore	33	--	--
Bainbridge Isl.	2	--	--	Kingston	1	--	--
Bellingham	29	248	--	Longview	23	1	61
Bingen	1	--	--	Oak Harbor	1	--	--
Bremerton	30	121	3	Olympia	--	--	1
Camas	1	--	--	Pasco	1	417	--
Cathlamet	3	--	3	Port Angeles	33	108	10
Clarkston	35	8	--	Port Townsend	37	12	--
Clinton	1	1	--	Raymond	3	--	--
Eagle Harbor	9	--	--	Seattle **	645	894	271
Edmonds	1	98	2	Tacoma	45	415	250
Everett	26	3	4	Vancouver	78	85	189
Ferndale	--	42	1	Vashon	2	--	--
Hoquiam	4	1	--	Westport	12	--	--
Grand Total	1128	2706	847				

*** It is interesting to note that Seattle appears to have a much higher frequency of transfers, by an order of magnitude. What is actually reflected here is the accuracy of the Seattle data, due to local requirements for mandatory reporting.*

The findings stemming from this review suggest a number of recommendations that will affect the whole of oil transfers. For this reason, specific recommendations will not be listed at the end of each section, but entered at the end of this report.

Current Practices for Mobile Facility Oil Transfers

Vessel oil transfers to and from mobile facilities are a common practice in the maritime industry, and these transfers occur in nearly every port and waterway around the state. As it is used here, the term mobile facility refers exclusively to tank trucks, although in other instances it may also mean petroleum carrying railcars. There are several categories of mobile transfers including vessel fuel delivery, lube oil delivery and waste oil vacuum truck operations. It was noted during field inspections that it is also a frequent practice to have more than one truck line up to complete the requested fuel transfer. So, while at a fixed facility the same transfer may be completed with one hook up and disconnect, mobile transfers may require multiple hook ups and disconnects to complete the fuel order.

The truck will use either gravity or its pumps to move the oil. By an order of magnitude, truck transfer rates are much lower than those occurring at fixed facilities or involving tank vessels. When the transfer is complete the hoses are disconnected and the mobile facility departs. There were no observed instances of voluntary pre-booming fuel transfers at mobile facility sites.

During the six month study period, mobile sources reported a range of single transaction transfer volumes from 50 to 240,000 gallons. The high end of this range deserves further consideration. It has been observed that the large six-figure gallon transfers are conducted by a number of fuel trucks, perhaps as many as twenty or more lined up one after another. Despite multiple coupling and uncoupling of delivery hoses for each truck, this operation is recorded in these data as one transfer. Finally, 27 fuel truck companies were included in the data presented here. Some known mobile oil companies appeared absent from the self reported data. The reason for this is unknown.

Practices Used

A tank truck typically consists of a large-frame truck with a tank that can transport up to 5,000 gallons, and may be combined with a second trailer for 10-11,000 gallon capacity. The mobile facility arrives at the prearranged transfer location and provides hoses which are run from the truck to the vessel, sometimes observed to be laid out across long stretches of a dock or across the decks of several other vessels moored at a dock. The transfer usually occurs on a pier or wharf, using a 2-4 inch diameter reinforced hose. Many mobile transfers occur at locations that are largely unregulated, although some local ports or municipalities require prior notice of transfers, permits or small fees. Conditions such as lighting, platform stability, access by emergency vehicles, response equipment caches, and so on are subordinate to the convenience or cost of the location.

Summary

Tank truck fueling of non-recreational vessels is arguably the least regulated of the three delivery modes, for reasons already stated in this report. These practices occur statewide, anyplace where a truck and a vessel can gain access to a dock, wharf or pier. In most cases, there is no requirement to pre-stage response equipment at these locations, even though these transfers are scheduled to occur daily. In the earliest years of Ecology's oil spill program, the regulatory and field inspection focus was intentionally kept on the larger fixed facilities and covered vessels.

Business practices have changed over time and now it is apparent that mobile facilities account for an increasing portion of the transfer activity in this state. It is Ecology's intention to further evolve our prevention and response requirements to write new comprehensive rules to now include mobile facilities.

Special note on waste oil transfers and mobile facilities

A large number of the self reported mobile facility transfers (35%) involved removing waste oil and bilge slops from vessels. The term waste oil refers to the oil that has been used in some form and now is no longer useful to the ship's operation, or that may have leaked or spilled into the bilge during the ship's day to day operation and commingled with the water in the bottom of the vessels hull. This transfer may be done using vacuum trucks. Both large and small vessels face obstacles in disposing of this oil by-product.

Disposing of Waste Oil

It is important that Washington State maintains viable mechanisms for removing this oil rather than having it dumped or pumped overboard in our waters or in the open ocean. Due to limited resources available to respond to spills, the State of Texas developed a program of education outreach combined with the free disposal of waste oil and bilge slops. The Bilge Water Reclamation program in Texas was developed in response to the large number of spills from commercial and recreational vessels. This program currently has eight locations that provide free waste oil and bilge water pump out facilities along the coast of Texas. At this time, this program has removed over 500,000 gallons of used oil from small commercial and recreation vessels with cooperation with local municipalities to share resources.

Current Practices for Fixed Facility Oil and Fuel Transfers

As it is used here, fixed facilities refer to oil processing plants, such as refineries, or oil and fuel storage or distribution plants. Of the 27 fixed facilities that are currently regulated by Washington, 25 of these facilities conduct marine oil transfers. The others move oil by pipeline and do not transfer to vessels. Because of the differences in statutory definition noted in the section on regulations, the Coast Guard sets standards for approximately 10 to 20 additional fixed facilities that the state has not regulated under its broad prevention and response program.

Practices Used

Large fixed facilities generally consist of a dock for vessels and some type of permanent shore-side oil storage structure, usually aboveground storage tanks. The vessels and storage tanks are connected by local pipelines that connect to the vessel with a flexible hose or a steel loading arm. Two basic types of transfers occur at fixed facilities: vessel fueling and cargo transfers. During fueling, a vessel takes on oil used to propel the vessel or generate power. Cargo transfers are those in which the oil is a commercial commodity being moved from one place to another. A vessel may deliver or receive oil as cargo, but will not consume it. By an order of magnitude, fixed facility transfer rates are much higher than those occurring at mobile facilities. They could be as high as 27,000 barrels per hour. Even the quickest shutdown of such a transfer after a spill can result in hundreds or thousands of gallons being spilled. The larger fixed facilities are broadly regulated by both the federal and state governments.

The reported volumes of single transaction transfers ranged from 2 barrels (84 gallons) to 650,000 barrels (27,300,000 gallons). In an average month of the sample data, roughly 450 fixed facility transfers were conducted statewide.

Summary

Neither the Coast Guard nor Ecology requires prevention or response plans from fixed facilities which transfer oil to non-recreational vessels with *less than* 10,500 gallon capacities. These facilities are often marinas that sell fuel and smaller fuel docks. Their number is unknown, but Ecology has estimated their number in the vicinity of 75 facilities.

The state's definition of facility bears a closer look. Current law (in part) states a facility is:

Any structure, group of structures, equipment, pipeline, or device, other than a vessel, located on or near the navigable waters of the state that transfers oil in bulk to or from a tank vessel or pipeline that is used for producing, storing, handling, transferring, processing, or transporting oil in bulk.

Missing from this definition is inclusion of the word *mobile facility* after tank vessel or pipeline.

This has left a loophole in Washington's prevention and response coverage. Some facilities are left out of – others have intentionally opted out of - state jurisdiction through the business practice of filling their storage tanks by rail car or tank truck. These same facilities are subject to federal regulation.

Current Practices for Vessel- to- Vessel Oil and Fuel Transfers

In general, transfers between vessels may involve either cargo or fuel oil. During bunkering, fuel oil is passed from a tank vessel to a receiving ship. During lightering, cargo oil is moved between tank vessels. This may be done to lighten the first vessel to decrease its draft. The state has a bunker rule focusing on vessels 300 gross tons and above. This rule will be expanded during the current rule process.

Lightering procedures and locations are regulated by the U.S. Coast Guard and sometimes by local port authorities. The Harbor Safety Committee established non-regulatory standards of care for lightering operations for the Puget Sound and Columbia River. By number, lightering operations in Puget Sound represent a small percentage of oil transfers, although the volume of oil transferred can be quite large.

During the six month study period, vessel sources reported a range of single transaction transfer volumes from 400 to 4,200,000 gallons.

Practices Used

Some marine terminals allow oil barges to come alongside cargo ships while at their berths, thus allowing cargo to be loaded and the vessel to be fueled at the same time. Vessel fueling can also occur at anchorages both within Puget Sound and on the Columbia River. Vessel-to-vessel oil transfers present a fundamental difference to mobile and fixed facility transfers to commercial vessels, stemming from the fact that one of the vessels may be held in place by only a single point of restraint, such as an anchor or single buoy, while the second vessel is rafted to the first. This allows the wind and current to move both vessels.

Summary

Bunkering and lightering nearly always occur between vessels regulated by the Coast Guard and Ecology regulations regarding spill prevention and response. Much like mobile deliveries vessel-to-vessel transfers can occur at docks with no requirements for pre-staged equipment. There is however, more that can be done to prevent spills. The issue of work hours and the role of fatigue in causing spills, weather limitations to transfers and state of the art spill prevention technology have been discussed with the rule advisory committee, and more time is needed to consider these important topics.

Pre-booming Oil and Fuel Transfers

Pre-booming is not a spill prevention technology, but rather an early intervention measure that under most circumstances will minimize the environmental and economic consequences of spills from oil transfer operations. There is currently no Washington State or federal requirement for pre-booming oil transfers, though there are several fixed facilities and individual vessel companies transferring oil in Washington voluntarily choosing to pre-boom. These companies report that there is both an initial start-up cost and on-going maintenance costs that they choose to bear even absent regulatory requirements for pre-booming. Most cite reducing the potential costs of spills and environmental damages as the reason they choose pre-booming. Other considerations in a decision to pre-boom or analysis of pre-booming efficacy should include:

- The proximity of environmental, economic or cultural resources to established transfer locations.
- Type of oil being transferred, for example, booming volatile (non-persistent) products concentrate explosive vapors and pose an explosive risk. Additionally, as noted earlier, persistent versus non-persistent products act differently in the environment.
- Currents and weather that may reduce the effectiveness of booms by pushing oil over or under the barrier or pushing the boom flat against a vessel.
- Safety of personnel when deploying boom: adverse wind, wave, and icing conditions may create unsafe conditions.
- The configuration of some piers may make it difficult to place a containment boom around the vessel and pier.
- Short term pre-booming requirements for vessels with a history of spills, while measures are taken to improve prevention and demonstrate compliance.

The following states have regulatory requirements for pre-booming oil transfers: Alaska, California, Connecticut, Florida, Maine, and New Jersey.

Table 4: Summary of state pre-booming requirements

State	Vessels Affected	Products Pre-Boomed
Alaska	Tank barges and tank vessels unless technically infeasible	Crude and persistent oils only at Valdez Terminal. Alaska revising rule to include waste oils.
California - Two Agencies State Lands Commission (SLC)	All tank barges and tank vessels at "marine terminals". Non-tank vessels over 250 barrels. High velocity >1.5 knots can opt out but must be able to boom in 30 minutes.	All persistent oils.
Office of Spill Prevention and Response (OSPR)	All vessels engaged in oil transfers except marine terminal transfers and non-tank vessels under 250 barrel capacity	Persistent and grades #1 and #2 oils.
4 foot stand-off*		
Connecticut	Tank ship and barges vessels except when unsafe.	All oil or petroleum liquids.
Stand-off is sufficient to catch and contain oil		
Florida	Vessels that can hold more than 10,000 gallons heavy oil.	All heavy oils regardless of purpose.
Facility must provide boom.		
Stand-off to collect as much as possible		
Maine	Tank vessels and barges.	All oils except those transferred for fuel.
50 foot stand-off		
New Jersey	All facilities subject to Coast Guard regulations and vessels transferring to other vessels at that facility.	All cargo, waste oils, and hazardous substances. No oils used as fuel, lubricant, flash point in excess of 100deg F.
Uses facility applicability to require protective booming.		
15 foot stand-off		

* Stand off refers to the distance away from the hull of the vessel the boom must be affixed in order to ensure effective containment.

Based on information provided by response contractors and several of the fixed facilities that currently pre-boom voluntarily in Washington, the cost to boom a transfer operation could be in the range of \$1,000 - \$3,000 each time depending on location, assuming 2,000 ft of boom. The cost for continuous standby or monitoring of the boom may drive the costs to the higher end of the range. Ecology has been directed to set standards for requiring pre-booming when it is safe and effective. We are continuing to gather information on the criteria that these states considered in setting their standards. Our approach will be to work with the Committee to set these standards by June 2006.

Description of Regulatory Program and Staffing Recommendations

The regulatory program that Ecology proposes to implement under existing authorities would encompass several different aspects of marine refueling and oil transfer operations. Ecology is developing rules that incorporate standards for oil deliverers that address oil spill prevention and response planning, oil transfer operational procedures and personnel training. These standards will be appropriately targeted to reduce risks of oil spills for each type of transfer operation. Also included in the rules will be a certification process for deliverers of oil to ensure that they met certain operating and planning standards to minimize the potential for spills from oil transfer operations. Chapters 90.56 and 88.46 RCW provide enforcement authority to Ecology for its field program.

Given the large range of facilities and vessels potentially covered by these requirements, Ecology will take a tiered approach. Large oil storage facilities and vessels over 300 gross tons are currently regulated under Ecology's existing broad prevention and response planning rules. Under the new rules, these large entities will also be required to incorporate pre-booming and other new standards into their existing plans. Mobile facilities and smaller oil storage facilities that transfer oil to mid-size non-recreational vessels will be required to follow a second tier of simpler, more streamlined standards tailored to reduce the spill risks associated with their smaller scale operations. Finally, the program would ensure there is pre-staged response equipment and engage in a public education and outreach effort with the smallest of the facilities (e.g. marinas) and vessels involved in oil transfer operations to reduce their spill risk.

Program Implementation – A Phased-in Approach

Phase One

Ecology would first target oil transfer monitoring, inspection and planning work at the smaller mobile and fixed facilities (and possibly certain tank barge operations) involved in fuel transfer activities that have not been regulated up to this point. For example, an effort will be made to more closely monitor oil transfers during the refueling of Washington's fishing fleet prior to its annual January departure to Alaska. Also, inspections will be conducted at oil transfers from tanker trucks and smaller oil storage facilities along the waterfronts in Puget Sound and Columbia River regions. An effort will also be made to provide educational materials and information during this process so that persons involved in refueling would be better informed about the agency's standards and requirements in this area.

Phase Two

Large oil storage facilities and regulated vessels will be the second priority for inspection and monitoring efforts since they are already regulated by the agency, but pose the biggest risk of a major or catastrophic oil spill. These facilities and vessels will be inspected in the course of other compliance work. Inspections to determine compliance with existing prevention requirements will be expanded to incorporate the new oil transfer standards. Technical assistance and compliance assurance will be elements of this process, as well.

Phase Three

Finally, small facilities such as fuel marinas will be visited by inspectors and public outreach and education staff to provide information on spill prevention issues. The intent will be to focus the effort on assisting small operators in reducing spill risks from their activities in addition to requesting or requiring them to follow simple requirements for pre-staged response equipment and training on its use.

In addition, the agency's current data management system that tracks vessel and facility information will need upgrading to support the new advance notice and oil transfer information needs.

Staffing Recommendations

The new oil transfer rule and associated regulatory program will require increased staffing to monitor oil transfers, provide public education and outreach activities, approve plans, manage information. More than 800 oil transfers occur per month in Washington and each new inspector will be able to perform about 40 oil monitor inspections/month. Therefore, at least 20 new inspectors would be required to monitor 100% of all oil transfers occurring in Washington on a monthly basis.

However, Ecology does not propose targeting 100% of all transfers. We hope to reprogram two existing staff (FTEs) and request five new FTEs to conduct targeted inspections at up to 35% of all oil transfers at mobile and fixed facilities, and vessels around the state. Also, one FTE is requested for oil spill plan review/approval, and certification of training programs. An additional \$241,400 in one-time funding is requested to support data management requirements under the new rule.

Annual Costs = \$602,400 (for 6 FTEs); and one time cost of \$241,400 for data management/upgrades and equipment; from Oil Spill Prevention Account.

Summary of Recommendations

Annually, there are billions of gallons of oil being transferred, in thousands of separate transactions at hundreds of locations statewide. As a result of this study, Ecology finds that oil transfer practices in Washington State pose a risk of spills to the environment that can be reduced or eliminated through prevention and response measures.

Ecology intends to proceed with a rule making process that will define conditions when pre-booming is required and require additional spill prevention measures for certain transfer operations by June 2006. With these assumptions, Ecology makes the following conclusions and recommendations.

Advance Notice of Oil Transfers Occurring Over Washington's Waterways

In order for Ecology to prioritize work and assign oil transfer inspectors, it is important that the oil deliverer notify the state prior to the planned transfer. Currently, there is a federal requirement for advance notice to the Coast Guard *four hours* before commencement, but the state does not have a similar standard. Not all transfers are required to be reported, and the reporting is sometimes incomplete and inconsistent. Advance notice of oil transfers will allow a data driven regulatory program of transfer inspection and monitoring.

- *Regulatory Intent.* At this time Ecology intends to write rules that require advance notice to the state. Ecology will coordinate this activity with the Coast Guard to avoid duplication of effort through the state's Memorandum of Agreement.
- *Legislative Recommendation.* Ecology recommends that the Washington State legislature specifically authorize the department to require advance notice of oil transfers.

New rules will Set Standards for Pre-booming

Pre-booming is an early intervention measure that under most circumstances will minimize the environmental and economic consequences of spills during oil transfer operations. There is currently no Washington State or federal requirement for pre-booming oil transfers, though there are several companies transferring oil in Washington that voluntarily choose to pre-boom. More discussion is needed over the next months with the Oil Transfer Rule Advisory Committee to develop standards.

- *Regulatory Intent.* At this time Ecology intends to write rules that define the circumstances under which pre-booming is required.

Both Prevention and Response Actions Are Needed to Address Oil Transfer Spills

A mixture of spill prevention and response planning standards are needed to eliminate or reduce the risks posed by spills that occur during oil transfers. Current regulatory oversight in this area ranges from broad standards for those posing the largest risk, to much more limited requirements for those oil deliverers that fall under the Coast Guard and state regulatory programs.. There is room for improvement at both ends of the regulatory spectrum.

- *Regulatory Intent.* In addition to response equipment and pre-booming, Ecology intends to write appropriately scaled rules that focus on additional prevention measures such as state-of-the-art technology for emergency shutoffs and alarm systems, and best management practices for training, awareness, and communication for oil deliverers.

State Regulations to Require Mobile Facility Spill Prevention and Response Actions

In the earliest years of Ecology's oil spill program, the priority for regulatory action and field inspection was intentionally focused on the larger oil handling facilities and regulated vessels. Business practices have changed over time, and it is now apparent that tank trucks and rail cars (mobile facilities) account for a significant portion of the transfer activity in this state. It is our intention to further evolve our prevention and response requirements to include mobile facilities.

- *Regulatory Intent.* At this time Ecology intends to use the authority under Chapter 90.56 and 88.46 RCW to write rules that expand its oil spill prevention and contingency planning requirements to include mobile facilities that transfer oil to and from non-recreational vessels. The requirements will be appropriately scaled and kept consistent with existing federal requirements.

Eliminating Spills at Marinas and Other Small Fueling Facilities

Neither the Coast Guard nor Ecology requires prevention or response plans from facilities that transfer oil to non-recreational vessels with *less than* 10,500 gallons oil capacity. These facilities are often marinas that sell fuel and other smaller fuel docks. Their number is unknown, but Ecology has estimated it to be in the vicinity of 75 facilities. In addition to requiring pre-staged response equipment, Ecology should pursue an aggressive spill prevention education program to eliminate spills at marinas.

- *Regulatory Intent.* At this time Ecology intends to set simple standards for response equipment and training on its use and disposal for those marinas and small facilities that deliver fuel to non-recreational vessels with less than 10,500 gallons of oil capacity.

Legislative Action to Reach Zero Spills Goal: Change in “Facility” Definition

As mentioned above, oil transferring practices have evolved over time, and it is now apparent that the state’s administrative definition of facility should evolve to keep up with current business practices (the term “facility” is defined in Chapters 90.56 and 88.46 of the Revised Code of Washington - see Appendix A of this report). A facility is currently defined as an entity that is located on or near the navigable waters of the state that transfers oil in bulk to or from *a tank vessel or pipeline*. There is no mention made of the increasingly common practice of using tank trucks and rail cars (mobile facilities) to move oil to and from facilities located near water. Consequently the regulatory burden to prevent and respond to spills is not shared equally amongst businesses that pose risks of spills and response to spills may be slowed.

- *Legislative Recommendation.* Ecology recommends that the Washington State Legislature expand the definition of “facility” to include those that transfer oil in bulk *to or from a mobile facility*, as well as by tank vessel or pipeline.

Certify Oil and Fuel Delivering Companies

Ecology has existing authority to require that oil deliverers be approved or certified for oil transfers to non-recreational vessels.

- *Regulatory Intent.* At this time Ecology intends to write rules that require approval or certification for deliverers that transfer oil in Washington. The approval/certification will be based on satisfactory demonstration of the prevention and response requirements, and will ensure a highly trained and responsive oil transfer industry.

Address the Serious Problem of Waste Oil Dumping

Waste oil dumping is a very serious problem, as evidenced by recent federal criminal convictions and the history of spills in Washington State. The State of Texas General Land Office has oversight for prevention and response and has developed a comprehensive program to ensure the safe disposal of waste oils from vessels.

- *Proposed Study.* Ecology should further study this issue and work with stakeholders to determine if a program similar to Texas’s should be developed and funded.

Restricted Transfer Operations

Certain natural conditions could limit when oil transfers can be safely conducted. Conditions such as lightning, severe winds, currents, waves, limited visibility (e.g. fog at night) may necessitate special precautions by operators.

- *Regulatory Intent.* At this time Ecology intends to write rules to require oil deliverers to set approvable operating standards for when oil transfers will either not be initiated or will be shut down.

Need for Field Presence to Educate, Assist, and Monitor Compliance

Ecology does not have funding and personnel to verify compliance with the proposed oil transfer regulations by having agency personnel onsite during transfer operations.

- *Funding Needed.* This work will continue to be coordinated with the Coast Guard under the state's Memorandum of Agreement to share resources and avoid duplication of effort. This regulatory presence would include inspections, fuel transfer monitoring, technical assistance, and education outreach to the companies and vessels involved.
- *Legislative Recommendation.* The Legislature should consider an agency request for additional personnel to accomplish this high-priority task.

Encourage Consistent Regulation in Oregon

Large oil spills on the Columbia River will impact both Washington and Oregon waters. Historically, both states have developed compatible spill response regulatory standards for those commercial regulated vessels that transit and operate on the Columbia River. Consistent regulation is important. The State of Oregon should develop similar regulations to safeguard oil transfers and protect the waters of both states.

- *Legislative Recommendation.* The Washington State Legislature should encourage the Oregon State Legislature to authorize Oregon agencies to adopt oil transfer standards for the Columbia River.

Manning, Work Hours

Ecology finds that the topic of adequate manning during oil transfers and appropriate work hours is important and needs further study.

- *Regulatory Intention.* Ecology intends to reserve a section of the rule for possible manning and work hour standards at a later date.

Appendix A

USCG Statutes

33 USC 1321 (j)(1)(C) Oil and Hazardous Substance Liability- Regulations
33 USC 1231 Ports and Waterways Safety Program
33 U.S.C. 1221 The Port and Tanker Safety Act
46 USC 3703 Carriage of Bulk Liquid Dangerous Cargoes- Regulations
46 USC 3715 Lightering
The Act to Prevent Pollution from Ships (ratification of the international MARPOL 73/78 protocols)

USCG Regulations

33 CFR 154 Facilities Transferring Oil or Hazardous Material in Bulk
33 CFR 155 Oil or Hazardous Material Pollution Prevention Regulations for Vessels
33 CFR 156 Oil and Hazardous Material Transfer Operations
40 CFR 300 National Contingency plan

Ecology Statutes

RCW 88.46 Vessel Oil Spill Prevention and Response
RCW 90.56 Oil and Hazardous Substance Spill Prevention and Response

Ecology Regulations

WAC 317-40 Bunkering Operations
WAC 173-180A Facility Oil-Handling Operations and Design Standards
WAC 173-180B Facility Oil-Handling Operations manual Standards
WAC 173-180C Facility Personnel Oil-Handling Training and Certification
WAC 173-180D Facility Oil Spill Prevention Plan Standards
WAC 173-181 Facility Response Plans (being revised)
WAC 317-10 Vessel Response Plans (being revised)

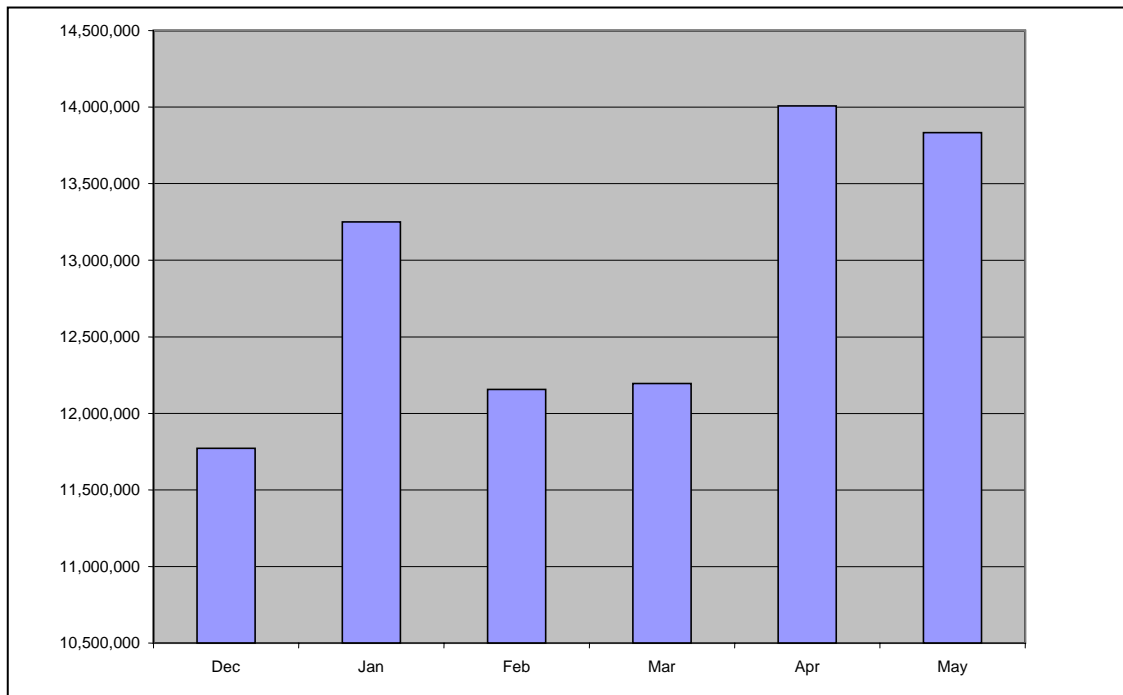
Both RCW 88.46.010 and 90.56.010 define facility as:

"Facility" means any structure, group of structures, equipment, pipeline, or device, other than a vessel, located on or near the navigable waters of the state that transfers oil in bulk to or from a tank vessel or pipeline, that is used for producing, storing, handling, transferring, processing, or transporting oil in bulk.

(b) A facility does not include any: (i) Railroad car, motor vehicle, or other rolling stock while transporting oil over the highways or rail lines of this state; (ii) retail motor vehicle motor fuel outlet; (iii) facility that is operated as part of an exempt agricultural activity as provided in RCW [82.04.330](#); (iv) underground storage tank regulated by the department or a local government under chapter [90.76](#) RCW; or (v) marine fuel outlet that does not dispense more than three thousand gallons of fuel to a ship that is not a covered vessel, in a single transaction

Appendix B

Figure 2: Oil Transfers Self Reported to the Coast Guard between December 2004 and May 2005



Appendix C

Practices above Minimum Standards Observed at Mobile Transfers:

- Truck provides a remote device for the vessel operators that displays transfer and pressure rates, and provides an emergency shutdown switch to the vessel operator.
- Vessels with a management policy that tanks will be filled only to 90 or 95% capacity in order to prevent overfills. For example, this is a policy of the state's ferry system.
- Transfer locations selected for appropriate lighting, storm water control, emergency response vehicle access. Mobile facility notifies local fire department before transfer.
- Radios used to enhance communication (versus reliance solely on hand signals).
- Pre-transfer conferences include a discussion of the vessel's written pre-loading plan, proper valve alignment, transfer and shutdown procedures, and spill preparations.
- Spill absorbent pads placed under all hose joints. Spill recovery equipment supplied by mobile facility. Mobile facility has standing contract with a spill response contractor.
- Training for truck driver/person in charge beyond 8 hours of hazardous materials handling, specifically training on safe response operations and company policies and procedures.
- Oil spill insurance specifically covering cargo oil for transfers to vessels.

Concerns Observed at Mobile Transfers:

- Lack of training in spill response techniques that lead to unsafe and ineffective responses to oil spills (for example, no personal flotation devices (life jackets) while working in small boats).
- No spill response or recovery equipment (or training on its use) at transfer locations in case of spills.
- The required written communication prior to the transfer filled out incorrectly or given only cursory attention.
- Leaking connection at truck due to failure of gasket or locking pin.
- No warning signs posted at the transfer location. "No Smoking" warning sign not adhered to.
- Transfer location not selected for appropriateness, for instance, equipment (forklift) operated within 5 feet of truck and connections, or no readily available response equipment to respond to spills.
- Ineffective communication between the truck and the vessel, communication difficulty due to noise, distance, language barriers or communication between mobile facility and receiving vessel occurring too infrequently.
- Transfers to receiving vessel that lack established transfer procedures and simple preventative measures such as properly labeled valves. In particular, this lack of prevention measures is seen most frequently in vessels under the Coast Guard and state regulatory thresholds (10,500 gallons and 300 gross tons).
- Damaged hoses/equipment.
- Leaks, drips or spills that go unreported.

Practices above Minimum Standards Observed at Fixed Facilities:

- Voluntarily pre-booming the entire dock and vessel prior to the oil transfer.
- Hard boom permanently installed under docks, or anchoring systems pre-established, to facilitate immediate containment of spills should they occur.
- Leak detection set at lower loss thresholds than required to detect even the smallest of leaks.
- Dock structural inspection and evaluation program with current and future vessels.
- Remote emergency pump switch on receiving vessel.
- Extra facility personnel assigned during transfer operations.

Concerns Observed at Fixed Transfers:

- Terminal operator asked to perform multiple tasks during transfer operation, or tasked to monitor tank levels more than 1000 feet away from the dock.
- Little or no communication to next shift personnel of transfer information.
- Communication barriers with foreign language tanker crews.

Practices above Minimum Standards Observed at Vessel to Vessel Transfer:

- Responsible Carrier Program for tank vessels(American Waterway Operators) that includes third party audits.
- Extra personnel on duty during critical phases of transfer. This was noted on the receiving vessels over 300 gross tons.
- Topping off procedures aimed at preventing spills: reducing transfer rate.
- Multiple spill detection monitors. Delivering vessel provides remote emergency shut to receiving vessel.
- Increased communication frequency between the fuel deliverer and receiver.
- Oil Transfer Procedures approved by the company and posted conspicuously. Training on procedures prior to each transfer.
- Brand new gaskets for all hose/flange connections.

Concerns Observed at Vessel- to- Vessel Transfers:

- Communication barriers with foreign language crews.
- Delivering and receiving vessel personnel fatigued or multiple tasked.
- Little or no communication to next (on-coming) shift personnel of transfer information.
- Leaking manifold connection due to failure of gasket. Poor maintenance of gaskets.
- Communication between delivering and receiving vessel too infrequent, or impaired due to noise, distance, etc.
- Receiving vessel personnel poorly trained in transfer procedures.